

REMARKS

Status of the Claims

In the present Amendment, claim 1 has been amended herein to recite that the tetrafluoroethylene polymer is a tetrafluoroethylene homopolymer or a modified polytetrafluoroethylene. Support is found, for example, at page 21, lines 28-30 of the specification.

Claim 1 has also been amended to incorporate the subject matter of claim 8, which depends from claim 1. Accordingly, claim 8 has been canceled.

Claim 11 has been amended to include each element of amended claim 1, such that claims 11 and 12 remain eligible for rejoinder under MPEP 821.04 upon the allowance of product claim 1.

No new matter has been added, and entry of the Amendment is respectfully requested.

Upon entry of the Amendment, claims 1, 4 and 7 and 9-12 will be pending in the application, of which claims 9-12 are withdrawn

***The Claimed Tetrafluoroethylene Polymer Aqueous Dispersion is Not Anticipated
by Araki et al. (US 5,670,593)***

Claims 1, 4 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Araki et al. (US 5,670,593) (“Araki”).

Without conceding to the merits of the rejection, independent claim 1 has been amended herein to incorporate the subject matter of claim 8, which depended from claim 1. Claim 8 is not subject to the present rejection based solely on Araki. Accordingly, the present rejection has been rendered moot.

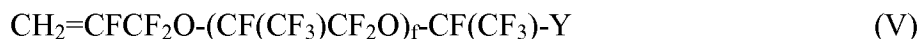
Withdrawal of the anticipation rejection of Claims 1, 4 and 7 is requested.

***The Claimed Tetrafluoroethylene Polymer Aqueous Dispersion is Patentable
over Araki in view of Hirashima et al. (US 5,856,392) and Araki et al. (WO 95-08598)***

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Araki in view of Hirashima et al. (US 5,856,392) (“Hirashima”), and further in view of Araki et al. (WO 95-08598A, the English equivalent is US 5,925,705).

Applicants traverse and respectfully request the Examiner to reconsider and withdraw the rejections based on the teachings of Araki and the secondary reference in view of the amendments to the claims, the remarks set forth below and the Rule 132 Declaration of Mr. Tsuda filed herewith.

Present claim 1 is directed to a tetrafluoroethylene polymer aqueous dispersion obtained by carrying out a tetrafluoroethylene emulsion polymerization in an aqueous medium in the presence of a fluorovinyl group-containing emulsifier. The fluorovinyl group-containing emulsifier comprises a fluorovinyl group-containing compound (V):



wherein f represents an integer of 0 to 10 and Y represents -SO₃M or -COOM in which M represents H, NH₄ or an alkali metal.

The claimed tetrafluoroethylene polymer aqueous dispersion has a fluorine-containing surfactant content of not higher than 50 ppm by mass.

The tetrafluoroethylene polymer of the dispersion is a perfluoro-based polymer and has a tetrafluoroethylene unit content exceeding 60 mole percent. In addition, the tetrafluoroethylene polymer is a tetrafluoroethylene homopolymer or a modified polytetrafluoroethylene.

Furthermore, the particle comprising the tetrafluoroethylene polymer has an average primary particle diameter of 50 to 500 nm.

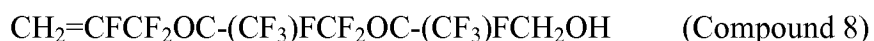
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Araki does not disclose or suggest the claimed tetrafluoroethylene polymer aqueous dispersion. The secondary references do not cure this deficiency.

The claims of the present application are directed to a dispersion containing a tetrafluoroethylene particle. The Examiner refers to Examples 33-35 of Araki as meeting the claimed dispersion. However, a dispersion is not obtained in Examples 33-35 of Araki because Araki employs suspension polymerization.

The Examiner asserts that aqueous suspension polymerization produces a suspension of the polymer, wherein a suspension is a dispersion before the separation of the water. However, a dispersion would not be obtained because the powder is directly obtained after the termination of suspension polymerization for producing a tetrafluoroethylene homopolymer or a modified polytetrafluoroethylene.

Furthermore, the Examiner is kindly directed to the Declaration of Mr. Tsuda filed herewith. In his Declaration, Mr. Tsuda reports the results of additional experimentation. Instead of, for example, using the Compound 3 in Example 3 of the present application, Mr. Tsuda employed 844 mg of the following Compound 8 to make a comparative showing representative of the compound employed in Example 33 of Araki having a CH₂OH termination:



Mr. Tsuda notes that the tested Compound 8 did not exhibit a polymer particle stabilizing effect, in contrast to, for example, the Compound 3 of the working Examples of the present application, which supports the patentability of the present claims.

In addition, the Examiner asserts that Araki does not teach away from using the claimed fluorovinyl group-containing compound (V) in the polymerization process of tetrafluoroethylene.

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However, Araki does not disclose the specific polymerization for producing a perfluoro-based polymer having a TFE unit content exceeding 60 mole percent. Further, it would not have been obvious to use the claimed fluorovinyl group-containing compound (V) to produce a polymer having a TFE unit content exceeding 60 mole percent since the compound (V) was known as an impurity. Also, it was not known as an emulsifier for producing a tetrafluoroethylene homopolymer or a modified polytetrafluoroethylene. Indeed, no dispersion of a tetrafluoroethylene homopolymer or modified polytetrafluoroethylene is found in the examples of Araki.

In more detail, the compound of formula (V) was known at the time of the invention as an impurity in a polymerization for producing a perfluoro-based polymer having a TFE unit content exceeding 60 mole percent, and therefore, it would not be obvious to use the compound of formula (V) in the suspension of Araki.

For example, US 2003/0065115 to Kobayashi et al. describes that:

[0008] In the process for producing PTFE of the present invention, TFE is subjected to aqueous dispersion polymerization, and the type and the content of impurities in TFE to be subjected to the polymerization, are substantially influential over the polymerizability of TFE or the properties of the resulting PTFE.

[0010] As the impurities in TFE, a saturated compound and an unsaturated compound may be mentioned.

[0012] The unsaturated compound may be a compound containing a double bond and/or a triple bond. Specifically, it includes compounds such as $\text{CF}_2=\text{CFH}$, $\text{CF}_2=\text{CFCl}$, $\text{CF}_2=\text{CH}_2$, $\text{CF}_2=\text{CHCl}$, $\text{CF}_2=\text{CCl}_2$, $\text{CFH}=\text{CH}_2$, $\text{CFH}=\text{CHCl}$, $\text{CFH}=\text{CCl}_2$, $\text{CFCI}=\text{CH}_2$, $\text{CFCI}=\text{CHCl}$ and $\text{CFCI}=\text{CCl}_2$. Such an unsaturated compound acts as a copolymerizable component in the polymerization of TFE.

A copy of US 2003/0065115 to Kobayashi et al. was submitted for the Examiner's consideration with the response filed July 30, 2010.

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In view of the amendment to the claims and the foregoing remarks, it is respectfully submitted that the present claims are patentable over the cited prior art, and withdrawal of the foregoing rejections is respectfully requested.

Withdrawal of all rejections, rejoinder of claims 11 and 12 and allowance of claims 1, 4, 7, 11 and 12 is earnestly solicited.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local, Washington, D.C. telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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CUSTOMER NUMBER

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